

C. REMARKS

Status of the Claims

Claims 1-18 are currently pending in the application. Claims 1, 3, 4, 7, 9, 10, 13, 15, and 16 are currently amended.

Lack of Obviousness under 35 USC § 103(a)

Claims 1, 3-6 are not obvious under Li in view of McCargar

Claims 1 and 3-6 stand rejected under 35 USC 103(a) as being unpatentable over Li et al (US Publication 2002/0032835) (hereinafter referred to as Li) in view of McCargar (US Patent 6,014,674). [Office Action, p. 2] Applicants respectfully assert that claims 1 and 3-6 are not obvious under Li in view of McCargar and therefore should be allowed.

Claim 1

Claim 1 reads:

1. (Currently Amended) A method for adjusting the size of an inline log for a file system, comprising:
 - receiving a request to adjust an allocated size for an inline log for a file system from a current size allocation to a new size allocation while maintaining a size allocation of a logical volume, wherein said inline log and said file system are stored in said logical volume;
 - allocating storage space from within said logical volume to said inline log according to a storage requirement for said new size allocation;
 - an
 - reformatting said inline log to said allocated storage space, such that said storage space allocated to said inline log for a file system is adjusted while said size of said logical volume housing said inline log and said file system remains static.

In establishing a prima facie case of obviousness under 103(a), the combined prior art references must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.3d 488,

20 USPQ2d 1438 (Fed Cir. 1991). Applicants respectfully assert that a prima facie case of obviousness is not established as to claim 1 for the following reasons.

First, Applicants respectfully assert that a prima facie case of obviousness is not established as to claim 1 because neither Li nor McCargar teaches or suggests receiving a request to adjust an allocated size for an inline log for a file system from a current size allocation to a new size allocation while maintaining a size allocation of a logical volume, wherein said inline log and said file system are stored in said logical volume. The Office Action cites paragraphs 0009 and 0018 as reading on “adjusting a log for a file system in a logical volume” and as describing “wherein a log structured array can accommodate the size changes in data produced through data compression...” [Office Action, p. 2] In addition, the Office Action cites paragraphs 0052 and 0057 as reading on the element as previously presented. [Office Action, p. 2]

Applicants note that paragraph 0052 of Li merely describes that disk array storage space can be divided into partitions, that the controller creates a map representation of each partition, or logical volume, and that the controller receives a request to allocate a number of logical volumes into the storage areas, where each request includes a size and a function mode. Paragraph 0057 of Li merely describes a data structure that maps data for segments with open spaces. Regardless of whether paragraphs 0009 and 0018 of Li describe adjusting the contents of a log for a file system in a logical volume or a log structured array that accommodates size changes in data produces through data compression, Li merely describes that the segment directory changes in size as the number of logical tracks in the segment, listed in the segment directory, changes. *Li*, paragraphs 0058, 0064. Li does not teach or suggest a controller receiving a request to adjust the actual portion of a logical volume allocated for a segment directory. In addition, Li does not describe that free space within a segment may be allocated to a segment directory, but instead describes in paragraph 0058 that the number of logical tracks in a segment is monitored to ensure that the segment directory does not get too large within the portion of the segment allocated to

the segment directory and in paragraph 0056 describes that free space does not include the sectors used for the segment directory.

In contrast to Li, claim 1 is amended to clarify that claim 1 teaches receiving a request to adjust the portion of the logical volume allocated for use by the log file. The specification of the present invention clarifies that it is typical to allocate portions of a logical volume to each of a log file and a file system, but that currently, when the log file needs additional storage space, additional pages are added to the logical volume for the log. *Specification*, paragraphs 0006 and 0007. The specification of the present invention describes that when a request to adjust the size allocation to the log file is received in the present invention, that the disk space allocated to the log file and the file system, within the logical volume, is adjusted. *Specification*, paragraphs 0032 and 0033. Thus, no new matter is added in the amendments for clarification.

In addition, Applicants note that claim 1 is clearly limited to a controller for a memory system not merely receiving a request to adjust the size allocation for the log file, but receiving a request to adjust the size allocation for the log file while maintaining the allocated size of the logical volume in which the log file is stored. Applicants respectfully note that neither Li nor McCargar nor the combination of references refers to a request to (1) adjust the size allocation from among a logical volume for a log file; and (2) main the allocated size of the logical volume in which the log file is stored.

Second, Applicants respectfully assert that a prima facie case of obviousness is not established as to claim 1 because neither Li nor McCargar teaches or suggests allocating storage space from within said logical volume to said inline log according to a storage requirement for said new size allocation. The Office Action cites paragraphs 0063-0064 and 0079 of Li as reading on this element. [Office Action, p. 2] Paragraph 0063 of Li reads: "The system for assigning logical tracks to open segments for storage on the disk drives to make efficient use of the storage space (the "filling algorithm") will be described with reference to Fig. 4." Paragraph 0064 of Li describes that in assigning logical tracks to a segment, if adding the logical track to the segment with free space would increase the total number of logical tracks in the segment above the maximum

logical track limit, which is set to limit the segment directory to a particular size, then the logical track is not added to the segment. Paragraph 0079 of Li describes factors for determining whether to hold free space of a segment open. The Office Action does not, however, point to any teaching or suggestion of adjusting the space allocated to the segment directory and in particular, the Office Action points to paragraphs that describe a segment directory limited to a particular size allocation. In contrast, claim 1 clearly teaches allocating storage space from within the logical volume to the space allocated to the log file, not merely adjusting the size of the log file itself as data is added to a file system. Therefore, in view of the amendments to clarify the teaching of claim 1, because neither Li nor McCargar, separately or in combination, teaches or suggests allocating storage space from within the logical volume to the inline log according to a storage requirement for the new size allocation, a prima facie case of obviousness is not established and the claim is allowable over Li and McCargar.

Claims 3-6

As to claims 3-6, Applicants respectfully assert that because the independent claim 1 upon which dependent claims 3-6 rely is not obvious in view of Li and McCargar, then the dependent claims 3-6 are also not obvious in view of Li and McCargar and the dependent claims should be allowed.

In addition, as to claim 3, Applicants note that claim 3 is amended, in view of the amendments to claim 1, to clarify the limitations of claim 3. Claim 3 reads:

3. (Currently Amended) The method according to claim 1 for adjusting the size of an inline log, wherein receiving a request to adjust an allocated size for an inline log further comprises:
 - receiving a first request to adjust said allocated size for said inline log for said file system from said current size allocation to said new size allocation;
 - detecting that additional storage space is not available for allocation to said logical volume for said first request; and
 - triggering said request to adjust said allocated size for said inline log for said file system from said current size allocation to said new size allocation while maintaining said allocated size of said logical volume.

Applicants respectfully assert that regardless of the previous rejection of claim 3, in view of the amendments to clarify claim 3, claim 3 is not taught or suggested by Li in view of McCargar. In particular, the Office Action previously cited paragraphs 0066 and 0069-0071 as reading on the first two elements of claim 3 and paragraphs 0016 and 0035 as reading on the third element of claim 3. [Office Action, p. 3]

First, Applicants respectfully note that no portion of Li or McCargar teaches or suggests receiving a first request to adjust the allocated size of an already allocated inline log. As previously noted with respect to claim 1, Li describes that the size of a segment directory may adjust as logical tracks are added to a segment and an entry for each logical track is added to the segment directory. Li, paragraphs 0058, 0064, 0067, and 0069. Li does not, however, describe adjusting the allocated size for a log from the current size allocation to a new size allocation. In contrast, claim 3 is amended to clarify that a first request is received to adjust the allocated size for the inline log for the file system from the current size allocation to a new size allocation.

Second, Applicants respectfully note that no portion of Li or McCargar teaches or suggests detecting that additional storage system is not available for allocation to the logical volume for the first request and therefore triggering the request to adjust the allocated size for the inline log while maintaining the allocated size of the logical volume. Applicants respectfully note that paragraph 0035 of Li describes data compression and paragraph 0016 of Li describes that “it is an object of this invention to increase the effective storage capacity of the storage system in terms of compression and compaction.” Applicants respectfully note that while Li describes compressing and compacting data for storage, Li does not teach or suggest compressing or compacting the already allocated size for a log file for the data storage system. In contrast, claim 3 is amended to clarify that claim 3 teaches that upon detecting, from the first request, that additional space is not available for allocation to the logical volume to allocate to the log file, the request is triggered to adjust the allocated size of the log file without adjusting the allocated size of the logical volume.

Therefore, because Li and McCargar, separately or in combination, do not teach each and every element of claim 3, claim 3 is allowable over Li and McCargar.

In addition, as to claim 4, Applicants note that claim 4 is amended, in view of the amendments to claim 1, to clarify the limitations of claim 4. Claim 4 currently reads:

4. (Currently Amended) The method according to claim 1 for adjusting the size of an inline log, wherein receiving a request to adjust an allocated size for an inline log further comprises:
- receiving a first request to adjust an allocated size for said file system from a current file system size allocation to a new file system size allocation; and
 - triggering said request to adjust said allocated size for said inline log from said current size allocation to said new size allocation to compensate for said first request to adjust said allocated size for said file system from said current file system size allocation to a new file system size allocation.

The Office Action previously cited Li, paragraphs 0009, 0013, 0018, 0052, 0057, 0063-0064 and 0079, as reading on the elements of claim 4. [Office Action, p. 3] Applicants respectfully assert that in view of the amendments to claim 4, it is clear that Li does not teach or suggest each and every element of claim 4 and therefore claim 4 is allowable over Li and McCargar. In particular, Applicants respectfully note that in paragraph 0056 of Li, it is clear that the free space available for assigning to a logical track does not include the sectors used for the segment directory. No portion of Li teaches or suggests adjusting the allocated size for the segment directory. Further, no portion of Li teaches or suggests receiving a request to adjust the allocated size for the file system and in response, triggering a request to adjust the allocated size of the log file for the file system. In contrast claim 4 is amended to clarify that the controller receives a first request to adjust the allocated size of the file system and then triggers the request to adjust the allocated size for the inline log to compensate for the request to adjust the allocated size of the file system. Because neither Li nor McCargar, separately or in combination, teaches or suggests each and every element of claim 4, prima facie obviousness is not established and the claim is allowance over Li and McCargar

Claim 2 is not obvious over Li and McCargar in view of Kulatunge

Claim 2 stands rejected under 35 USC 103(a) as being unpatentable over Li et al (US Publication 2002/0032835) (hereinafter referred to as Li) in view of McCargar (US Patent 6,014,674) and further in view of Kulatunge et al (US Patent 6,353,902). [Office Action, p. 4] Applicants respectfully assert that because claim 2 is dependent upon claim 1, which is allowable over Li in view of McCargar, claim 2 is also allowable over Li in view of McCargar and Kulatunge et al.

Claims 7-18

The Office Action rejects claims 7-18 on the same ground of rejection as claims 1-6. Applicants respectfully assert that because claims 1-6 are allowable, as previously asserted, claims 7-18, which are rejected on the same ground of rejection as claim 1-6, are allowable for at least the same reason as claims 1-6.

Conclusion

Applicants note the citation of pertinent prior art cited by the Examiner.

In view of the foregoing, withdrawal of the rejections and the allowance of the current pending claims is respectfully requested. If the Examiner feels that the pending claims could be allowed with minor changes, the Examiner is invited to telephone the undersigned to discuss an Examiner's Amendment.

Respectfully submitted,

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